

## Patent Abstracts of Japan

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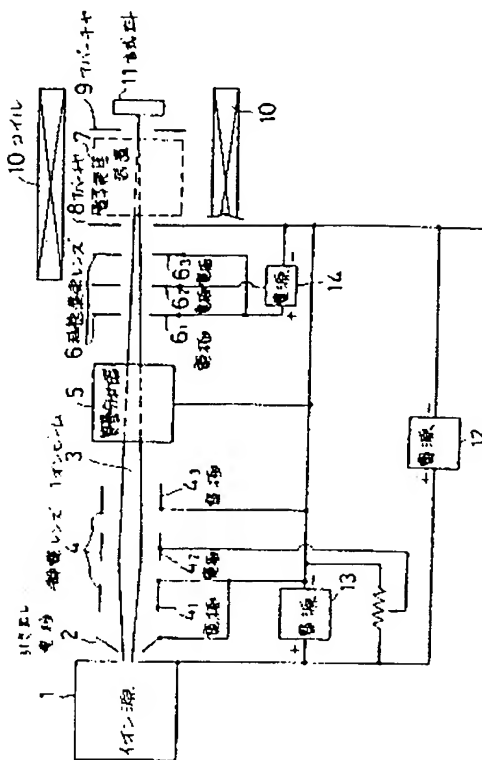
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TITLE : LOW SPEED ION GUN



ABSTRACT : PURPOSE: To exclude the limitations of beam diameter and current value by space charge effect and enable the generation of a large current and highly focusing ion beam by confining electrons in an energy region near the ion optical axis between the deceleration and focusing space of the ion beam and a sample by a magnetic field.

CONSTITUTION: An ion beam 3 drawn by an electrode 2 is focused by an electrostatic lens 4, and only a desired ion species is separated by a mass spectrometer 5, decelerated by a deceleration and focusing lens 6 and throttled by apertures 8, 9. In this case, to prevent the divergence of the beam 3 by space charge effect, the thermoelectrons emitted from an electron generating device 7 are confined near the ion optical axis by a magnet 10. The space of the drift region not conducting acceleration and deceleration of the beam 3 is filled with the electrons. At a result, the positive charge by the ions in the beam 3 and the negative charge by the electrons are well-balanced to neutralize the space charge. The beam 3 passed through a device 7 comes into a sample 11 through the aperture 9.

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